

REMARKS

Applicants acknowledge the withdrawal of claims 83 to 95, 97 to 103, 106 to 113, 116 to 146, 150 to 153 and 155 to 216 and the examination of claims 82, 96, 104, 105, 114, 115, 147 to 149, and 154 following applicants' reply to the election of species requirement. Claim 47 has been canceled to advance prosecution.

The rejection of all the examined claims under the judicially created doctrine of obviousness type double patenting as allegedly unpatentable over claims 1 to 24 of commonly owned U.S. Patent No. 6,450,635 and the related provisional rejection of the same claims over claims 1 to 42 of co-pending application Serial No. 10/142,379, a divisional of the '635 patent, are respectfully traversed.

The Examiner acknowledges there are differences between the claimed subject matter of the instant application and that of the pending application and issued patent but asserts that because ink jet printing is a well-known method of applying colorants to selected portions of a substrate to fabricated articles, there is a sufficient relationship between the claimed subjects matter to justify the rejections. Applicants respectfully disagree. The

present claims are directed to subject matter that is patentably distinct from the claims of the cited patent and publication.

The patent and application relate to forming a colored layer and the like by discharging ink by an ink jet method onto a wettability-varied area of a photocatalyst-containing layer. One can form a thick colored layer using such a technique because the colored layer forming solution and the like can be coated onto the wettability-varied area of the photocatalyst-containing layer, namely the hydrophilic portion on the photocatalyst-containing layer, particularly when an ink jet method is used. In other words, when the colored layer is formed on the wettability-varied area of the photocatalyst-containing layer by a coating method such as, for example, a dip coating method, the thickness of the colored layer cannot be sufficiently insured to obtain high quality color filters. It is extremely important that the color filter be thick.

In addition, when one forms a colored layer by discharging ink by the ink jet method, the ink is discharged from the head of the ink jet apparatus in dot form so that the resulting pattern will be a dot pattern. Therefore, if a striped shaped colored layer is desired, a precise color layer pattern cannot be obtained by the

ink jet method because the sides of the stripes will not be in a straight line, which in turn leads to a possibility of a defect such as color unevenness.

The present invention, in contrast to what I claimed in the cited patent and published application, provides for wetting and even spreading of the discharged ink in the hydrophilic area because the colored layer is obtained by discharging ink to the hydrophilic area on the photocatalyst-containing layer, even with an ink jet method. For example, if one wishes to form a striped shape colored layer, the sides of the stripes will be straight, meaning that a precise pattern can be obtained and a color unevenness defect will not result. The concepts are different.

While it is true that using an ink jet method to form a colored layer is well known, the effect described above can be obtained for the first time by making joint use of forming a color filter by use of the wettability varied area on the photocatalyst-containing layer and use of an ink jet method. Thus the invention as claimed patentably defines over the cited art. The rejection should be withdrawn.

The rejection of claims 104 and 114 under 35 USC 102 as anticipated by JP '808 is also respectfully traversed.

Although JP '808 discloses a photocatalyst-containing layer, the publication says nothing about the photocatalyst-containing layer being a layer containing a material whose wettability varies by an action of the photocatalyst upon exposure to light. Claims 104 and 114 call for elements that obtained by a pattern-wise exposure of the photocatalyst-containing layer to obtain a wettability varied pattern and forming a functional layer on such a pattern. The rejection should be withdrawn.

Applicants also respectfully traverse the rejection of claims 104 and 114 under 35 USC 102 as anticipated by JP '914. This reference, as JP '808, does disclose a photocatalyst containing layer as part of a two-layered structure containing a photocatalyst layer and a hydrophilic layer formed thereon. In such a case, however, the wettability of the photocatalyst layer itself is not varied; rather the wettability of the hydrophilic layer on the photocatalyst layer is varied. Thus, the requirement that a photocatalyst-containing layer is a layer containing a material whose wettability is varied by an action of the photocatalyst upon

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exposure to light (as called for in instant claims 104 and 114) is not taught or suggested in JP '914.

Furthermore, ink images are formed on the surface of the photocatalyst layer and the hydrophilic layer in JP '914. The ink images there are transferred to a predetermined member to be transferred and are not used as elements by forming a functional layer on a layer comprising a photocatalyst layer and a hydrophilic layer. The rejection should be withdrawn.

The rejection of claim 147 under 35 USC 102 as anticipated by EP '315 is moot in light of the cancellation of that claim.

The rejection of claims 82, 96, 104, 105, 114, and 115 under 35 USC 102 as anticipated by GB '589 is also respectfully traversed. The reference discloses a photosensitive material and a technique for forming by forming a latent image by light on a hydrophilic medium that becomes hydrophilic when exposed to light, relying on the wettability difference to an aqueous ink. The reference has no description of a material containing a photosensitive material such as zinc oxide and titanium oxide and a material such as silicone. Applicants also point out that GB '589 at page 5, lines 12 to 13 contains a discussion that the light

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irradiation to the photosensitive material is 10 to 1,000 ergs/cm<sup>2</sup>; the material is assumed not to be made hydrophilic by an energy of this value, even though the titanium oxide has a photocatalyst function.

The Examiner is referred to instant Example 4 which contains the comment that "the photocatalyst containing layer was irradiated with ultraviolet light at an intensity of 70 mW/cm<sup>2</sup> for two min using a high pressure mercury lamp." The indicated exposure amount is identical to 800 mJ/cm<sup>2</sup>. The upper limit in GB '859 of 1,000 ergs/cm<sup>2</sup> equals 0.1 mJ/cm<sup>2</sup>, namely 1/84,000 the radiation amount of instant Example 4.

The irradiating amount indicated in GB '589 is far too low a quantity of ultraviolet light needed to photoexcite titanium oxide to obtain an oxidation reduction function or a hydrophilic function. Applicants assume that a totally different sensitive function is carried out here and point out that "hydrophilic" is used in the reference only to an extent that a hydrophobic property of a hydrophobic matter is relatively weakened.

The reference neither discloses nor suggests that a hydrophilic property is caused by an excitation by a photocatalyst

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and there is no reason to perceive the same from the reference.  
The rejection should be withdrawn.

The rejection of claim 147 under 35 USC 102 as anticipated by JP '910 is also rendered moot in view of the cancellation of that claim.

The Examiner is requested to acknowledge applicants' claim for priority under 35 USC 119 and to acknowledge the Information Disclosure Statements filed October 10, 2001 and December 23, 2003.

Reconsideration of the case is earnestly solicited.

Respectfully submitted,

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